

SEQUENCE LISTING

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<120> Particles for Gene Therapy

<130> 319-2 US

<140> PCT/DE00/00363

<141> 2000-02-04

<150> DE 199 04 800.2

<151> 1999-02-05

<160> 19

<170> PatentIn Ver. 2.1

<210> 1

<211> 347

<212> PRT

<213> Artificial sequence

<220>

<223> Description of the artificial sequence:

Fusion protein comprising a LHBs and heterologous binding site RGD

<400> 1

Met Gly Arg Gly Asp Gly Ala Gly Ala Phe Gly Leu Gly Phe Thr Pro
1 5 10 15

Pro His Gly Gly Leu Leu Gly Trp Ser Pro Gln Ala Gln Gly Ile Leu
20 25 30

Glu Thr Leu Pro Ala Asn Pro Pro Pro Ala Ser Thr Asn Arg Gln Ser
35 40 45

Gly Arg Gln Pro Thr Pro Leu Ser Pro Pro Leu Arg Asn Thr His Pro
50 55 60

Gln Ala Met Gln Trp Asn Ser Thr Thr Phe His Gln Thr Leu Gln Asp
65 70 75 80

Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly Gly Ser Ser Ser Gly
85 90 95

Thr Val Asn Pro Val Pro Thr Thr Val Ser Pro Ile Ser Ser Ile Phe
100 105 110

Ser Arg Ile Gly Asp Pro Ala Leu Asn Met Glu Asn Ile Thr Ser Gly
115 120 125

Phe Leu Gly Pro Leu Leu Val Leu Gln Ala Gly Phe Phe Leu Leu Thr

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130 135 140
 Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp Ser Trp Trp Thr Ser Leu
 145 150 155 160
 Asn Phe Leu Gly Gly Thr Thr Val Cys Leu Gly Gln Asn Ser Gln Ser
 165 170 175
 Pro Thr Ser Asn His Ser Pro Thr Ser Cys Pro Pro Thr Cys Pro Gly
 180 185 190
 Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile Ile Phe Leu Phe Ile Leu
 195 200 205
 Leu Leu Cys Leu Ile Phe Leu Leu Val Leu Leu Asp Tyr Gln Gly Met
 210 215 220
 Leu Pro Val Cys Pro Leu Ile Pro Gly Ser Ser Thr Thr Ser Thr Gly
 225 230 235 240
 Pro Cys Arg Thr Cys Thr Thr Pro Ala Gln Gly Thr Ser Met Tyr Pro
 245 250 255
 Ser Cys Cys Cys Thr Lys Pro Ser Asp Gly Asn Cys Thr Cys Ile Pro
 260 265 270
 Ile Pro Ser Ser Trp Ala Phe Gly Lys Phe Leu Trp Glu Trp Ala Ser
 275 280 285
 Ala Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln Trp Phe
 290 295 300
 Val Gly Leu Ser Pro Thr Val Trp Leu Ser Val Ile Trp Met Met Trp
 305 310 315 320
 Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Leu Ser Pro Phe Leu Pro Leu
 325 330 335
 Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
 340 345

<210> 2

<211> 215

<212> PRT

<213> Artificial sequence

<220>

<223> Description of the artificial sequence:

Fusion protein comprising a HBcAg, a cell-permeability-mediating polypeptide and heterologous binding site RGD

<400> 2

Met Pro Leu Ser Ser Ile Phe Ser Arg Ile Gly Asp Pro Thr Val Gln
 1 5 10 15

Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile Asp Pro
20 25 30

Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu Ser Phe Leu Pro Ser
35 40 45

Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr Ala Ser Ala Leu
50 55 60

Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys Ser Pro His His Thr
65 70 75 80

Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr Leu Ala
85 90 95

Thr Trp Val Gly Val Asn Leu Glu Asp Pro Glu Phe Arg Gly Asp Ala
100 105 110

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
115 120 125

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
130 135 140

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
145 150 155 160

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
165 170 175

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
180 185 190

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Ser
195 200 205

Gln Ser Arg Glu Pro Gln Cys
210 215

<210> 3

<211> 663

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artificial sequence:

DNA coding for a fusion protein comprising a HBcAg, a cell-permeability-mediating polypeptide and heterologous binding site RGD

<400> 3

atgcccatat cgtaatctt ctcgaggatt ggggaccctg gatccactac tgttcaagcc 60

tccaagctgt gccttgggtg gctttggggc atggacatcg acccttataa agaatttga 120
gctactgtgg agttactctc gttttgcct tctgacttct ttccttcagt acgagatctt 180
ctagataccg cctcagctct gtatcgggaa gccttagagt ctctgagca ttgttcacct 240
caccatactg cactcaggca agcaattctt tgctgggggg aactaatgac tctagctacc 300
tgggtgggtg ttaatttga agatccagaa ttccgaggcg acgcgtctag agacctagta 360
gtcagttatg tcaacactaa tatgggccta aagttcaggc aactcttgtg gtttcacatt 420
tcttctca cttttggaag agaaccgt atagagtatt tgggtcttt cggagtgtgg 480
attgcactc ctccagctta tagaccacca aatgcccta tcctatcaac acttccgaa 540
actactgtt ttagacgacg aggcaggctc cctagaagaa gaactccctc gcctcgaga 600
cgaaggctc aatgcccg tgcgagaaga tctcaatctc gggaacctca atgttagtat 660
tcc 663

<210> 4
<211> 1047
<212> DNA
<213> Artificial sequence

<220>

<223> Description of the artificial sequence:

DNA coding for a fusion protein comprising a LHBs and heterologous binding site RGD

<400> 4

atgggccgtg gcgaaggagc tggagcattc gggctgggtt tcacccacc gcacggaggc 60
ctttgggt ggagccctca ggctcaggc atactacaaa cttgccagc aaatccgcct 120
cctgcctcca ccaatcgcca gacaggaagg cagcctacc cgctgtctcc accttgaga 180
aacactcatc ctgagccat gcagtggaat tcacaaacct ttaccaaac tctgcaagat 240
cccagagtga gaggcctgta ttccctgct ggtggctcca gttcaggagc agtaaaccct 300
gttcgacta ctgcctctcc cttatcgta atctctcga ggattgggga cctgcgctg 360
aacatggaga acatcacatc aggatccta ggacccttc tctgttaca ggcggggtt 420
ttctgttga caagaatcct cacaataccg cagagtctag actcgtgtg gacttctc 480
aattttctag ggggaactac cgtgtgtctt ggccaaaatt cgcagtcctc aacctcaat 540
cactcacaa cctcctgtcc tccaactgt cctgggtatc gctggatgtg tctcggcgt 600
ttatcatct tctctctcat cctgtgcta tgcctcatct tctgttgggt tctctggac 660

tatcaaggta tgttccccgt ttgtcctcta attccaggat cctcaaccac cagcacggga 720
 ccatgccgaa cctgcatgac tactgetcaa ggaacctcta tgtatccctc ctgttgctgt 780
 accaaacctt cggacggaaa ttgcacctgt attcccatcc catcatcctg ggctttcgga 840
 aaattcctat gggagtgggc ctcagcccgt ttctcctggc tcagtttact agtgccattt 900
 gttcagtggg tcgtagggct ttccccact gtttggtttt cagttatatg gatgatgtgg 960
 tattgggggc caagtctgta cagcatcttg agtccctttt taccgtgttt accaattttc 1020
 tttgtcttt gggatacat ttaaacc 1047

<210> 5
 <211> 35
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artificial sequence:
 Primer

<400> 5

ccatattctt gggaacaaga tatccagcac ggggc 35

<210> 6
 <211> 33
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artificial sequence:
 Primer

<400> 6

ggattgctgg tggaagatat ctgccccgtg ctg 33

<210> 7
 <211> 33
 <212> DNA
 <213> Artificial sequence

<220>

<223> Description of the artificial sequence:
Primer

<400> 7

cagcacgggg cagatatctt ccaccagcaa tcc

33

<210> 8

<211> 38

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artificial sequence:
Primer

<400> 8

gccccgtgct ggatatcatc ttgtcccaa gaatatgg

38

<210> 9

<211> 36

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artificial sequence:
Primer

<400> 9

aaaagatctg gccgtggcga aggagctgga gcattc

36

<210> 10

<211> 30

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artificial sequence:
Primer

<400> 10

aaaagatctg gtttaaatgt atacccaaag

30

<210> 11

<211> 33

<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 11

cccgatatca tgatcatctct tggatcatgct cta

33

<210> 12
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 12

ggggatcatcg gtcgatgtcc atgccccaaa

30

<210> 13
<211> 36
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 13

gggggatccc gatgtacggg ccagatatat gcgttg

36

<210> 14
<211> 27
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 14

gggggatccg cggccgcttt acttgta

27

<210> 15
<211> 57
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 15

nnnagatcta tgcccatatc gtcaatcttc tcgaggattg gggaccctgg atccnnn

57

<210> 16
<211> 30
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 16

nnnggatcca ctgttcaagc ctccaagctg

30

<210> 17
<211> 36
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 17

nnngaattct ggatcttcca aattaacacc caccca

36

<210> 18
<211> 39
<212> DNA
<213> Artificial sequence

<220>
<223> Description of the artificial sequence:
Primer

<400> 18

nnngaattcc gaggcgacgc gtctagagac ctagtagtc

39

5 <210> 19
<211> 30
<212> DNA
<213> Artificial sequence

10 <220>
<223> Description of the artificial sequence:
Primer

15 <400> 19

nnnaagcttt ccccacctta tgagtccaag

30

20

nnnaagcttt ccccacctta tgagtccaag